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NEWS

AMSOIL 100% Synthetic High-Mileage Motor Oil Attacks Sludge

AMSOIL High-Mileage Motor Oil reduced sludge by 67%, demonstrating its cleaning power that helps engines last longer and perform better.



by **BRAD NELSON**
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Sludge presents an enemy to peak engine performance and vehicle longevity, especially in high-mileage vehicles. [AMSOIL 100% Synthetic High-Mileage Motor Oil](https://blog.amsoil.com/amsoil-100-synthetic-high-mileage-motor-oil-attacks-sludge/) is engineered to remove and prevent sludge.



formed by wear particles, water, fuel and coolant. These contaminants are often acidic and have polarity within their molecular structure, meaning they are insoluble in the motor oil as oils have an affinity for non-polar substrates.



AMSOIL High-Mileage 100% Synthetic Motor Oil is specifically engineered to help extend the life of high-mileage vehicles.

Under the right conditions, these polarized contaminants can agglomerate and fall out of solution. Once deposited on surfaces inside the engine, the polar nature of sludge can accelerate the sludge-formation process as it continues to pull other polarized contaminants out of suspension and bond with them. This process can rapidly expand the sludge deposit and begin to cause engine-performance issues.



Polarized contaminants can agglomerate and fall out of solution, depositing on surfaces inside the engine.

Where it forms

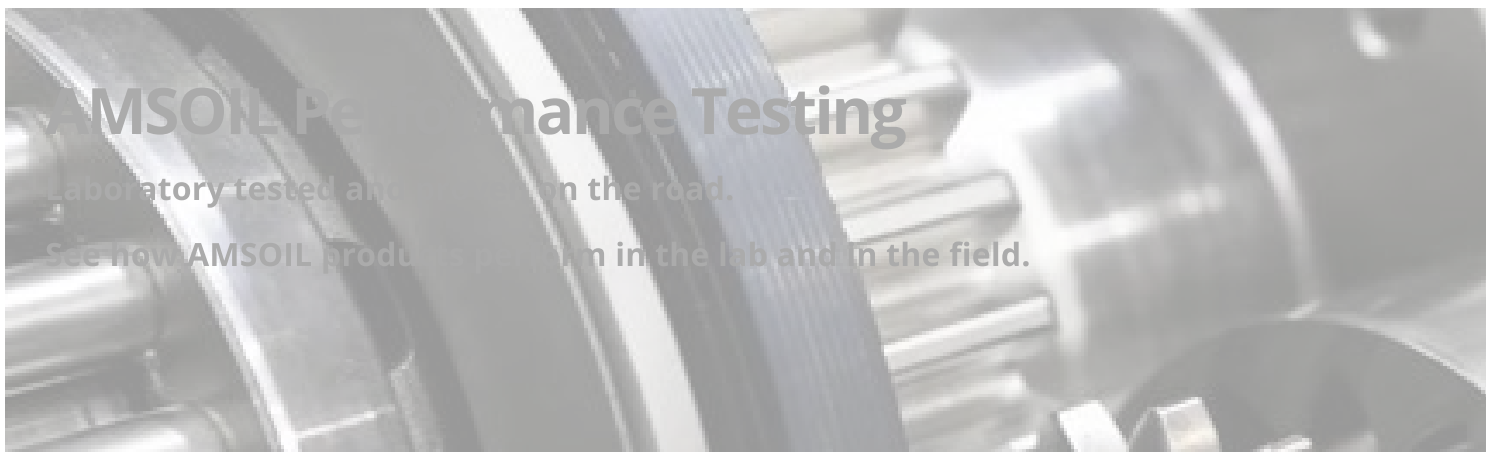
Sludge can form anywhere, but it typically builds on non-moving engine components, including the tops of cylinder heads, valve covers and oil pans. Any engine can develop sludge; however, engines that stress the oil are more likely to form sludge and deposits. For example, gasoline direct-injection (GDI) engines typically have higher concentrations of fuel dilution. Turbocharged applications expose the engine to higher temperatures and pressures, leading to more combustion byproducts.



Short trips can also contribute to sludge formation. For example, if an engine doesn't reach normal operating temperatures, it can lead to water contamination. Sludge can also form when worn or damaged head gaskets allow coolant into the oil. Older engines may also exhibit increased blow-by, which can introduce excessive combustion byproducts into the oil.

Why does it matter?

Dirty components run poorly, pollute and don't last. They cause system failures in engines that dramatically increase downtime, increase operating costs and reduce equipment life. Clean engine components, on the other hand, require less maintenance, produce more energy, use fuel more efficiently, increase equipment service life and run cleaner.



Battling sludge

There are a few different types of deposits and sludge, and some are easier to remove than others. How you attack them is important. Detergents added to lubricants help minimize deposit formation in the engine.

The most-used detergents in motor oil formulations are metallic (ash) soaps with reserve basicity to neutralize the acids formed as byproducts of combustion. Other detergents include metalorganic compounds of sodium, calcium and magnesium phenolates, phosphonates and sulfonates.



Properly selected motor-oil components are critical to remove and prevent sludge. The best form of removal is slow and steady. Cleaning an engine too aggressively can lead to large sludge agglomerations dislodging and clogging narrow oil passageways, ultimately leading to oil starvation. Sludge removal that's too rapid can also clog the oil filter. Therefore, steadily dissolving sludge through a balanced motor-oil detergent and dispersant package is the safest method without manual intervention. For ultimate cleanliness, AMSOIL Engine and Transmission Flush (FLSH) can help speed up sludge removal with its powerful boost of detergents.

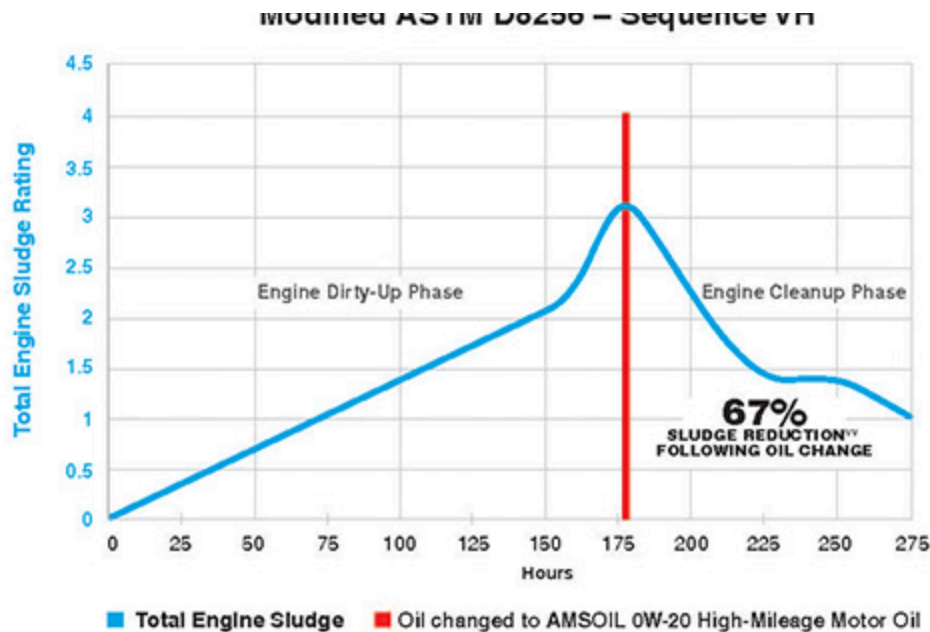


Properly selected motor-oil components are critical to remove and prevent sludge. Motor-oil detergents are great as cleaning agents, even at higher temperatures (piston/combustion chamber), neutralizing the acids formed by combustion and oxidation and aiding in solubility. High-quality dispersants that help keep solid contaminants in suspension can also help re-solubilize the polar contaminants that make up sludge and remove them from the engine at the next oil change.

Ultimately, prevention is the best method to avoid sludge issues. Using a high-quality motor oil with precisely formulated detergents and dispersants, high-quality synthetic base oils and optimized antioxidants helps keep engines running at their peak.

AMSOIL High-Mileage Motor Oil removes sludge

AMSOIL 100% Synthetic High-Mileage Motor Oil is specifically designed for the unique demands of high-mileage engines – including boosted detergency. To prove it performs, we subjected it to independent testing. The result: AMSOIL High-Mileage Motor Oil reduced sludge by 67%,¹ demonstrating its cleaning power that helps engines last longer and perform better.



**Based on independent testing of AMSOIL 0W-20 100% Synthetic High-Mileage Motor Oil using a modified Sequence VH Test (ASTM D8256).

AMSOIL Reduces Sludge

AMSOIL 100% Synthetic High-Mileage Motor Oil **reduced sludge by 67%,^{vv}** demonstrating its cleaning power that helps engines last longer and perform better.

^{vv}Based on independent testing of AMSOIL 0W-20 100% Synthetic High-Mileage Motor Oil using a modified Sequence VH Test (ASTM D8256).



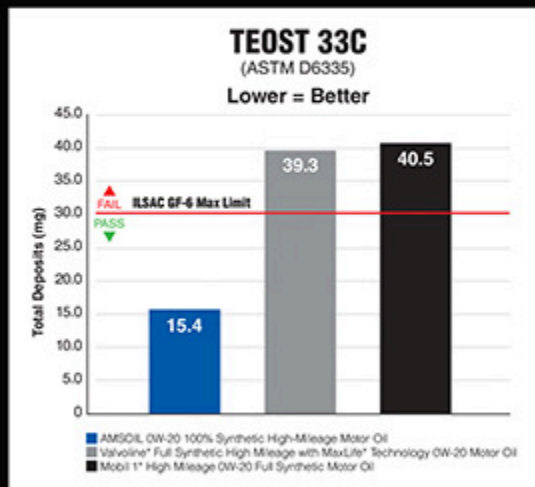
If your goal is to keep your high-mileage vehicle (75,000+ miles/120,700+ km) on the road for the long haul, removing sludge and keeping the engine clean is vital. AMSOIL 100% Synthetic High-Mileage Motor Oil can help revive your engine's performance and keep it clean from deposits for many miles to come. It's designed specifically for the unique demands of high-mileage engines, including boosted detergency that

AMSOIL High-Mileage Motor Oil prevents deposits

In addition to removing existing sludge, AMSOIL 100% Synthetic High-Mileage Motor Oil provides up to 62% better deposit prevention.² That means you can put the issue of sludge behind you once and for all – your engine will be clean, and new deposits will be prevented from forming. It's a one-two punch that sludge can't survive.

AMSOIL Prevents Deposits

AMSOIL 100% Synthetic High-Mileage Motor Oil provides **up to 62% better deposit prevention.**^{WW1}



^{WW1}Based on independent testing of AMSOIL 0W-20 100% Synthetic High-Mileage Motor Oil, Valvoline® Full Synthetic High-Mileage with MaxLife® Technology 0W-20 Motor Oil (batch code J2622C5 purchased December 21, 2022) and Mobil 1® High-Mileage 0W-20 Full Synthetic Motor Oil (batch code 11022L21A 6606 purchased December 8, 2022) in the industry-standard TEOST 33C Test (ASTM D6335) as required by the ILSAC GF-6 specification. *All trademarked names are the property of their respective owners and may be registered marks in some countries. No affiliation or endorsement claim, express or implied, is made by their use.



¹Based on independent testing of AMSOIL 0W-20 100% Synthetic High-Mileage Motor Oil using a modified Sequence VH Test (ASTM D8256). ²Based on independent testing of AMSOIL 0W-20 100% Synthetic High-Mileage Motor Oil, Valvoline® Full Synthetic High-Mileage with MaxLife® Technology 0W-20 Motor Oil (batch code J2622C5 purchased December 21, 2022) and Mobil 1® High-Mileage 0W-20 Full Synthetic Motor Oil (batch code 11022L21A 6606 purchased December 8, 2022) in the industry-standard TEOST 33C Test (ASTM D6335) as required by the ILSAC GF-6 specification.

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by [BRAD NELSON](#)

Brad Nelson is a staff writer for AMSOIL. Outside of work he enjoys family adventures, wilderness exploration and riding/wrenching on vintage metric motorcycles.

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